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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: PARRINI, Lorenzo) Confirmation No. 8662
) Group Art Unit: 3654
Serial No.: 10/717,805)
) Examiner: KRUER, Stefan
Filed: November 20, 2003)
) Attorney Docket: 16615
For: REINFORCED SYNTHETIC CABLE)
FOR ELEVATORS) Customer No.: 43935

May 30, 2008

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REPLY BRIEF

Honorable Sir:

In the Examiner's Answer mailed April 7, 2008, the Examiner raised certain new points of argument. Accordingly, this Reply Brief is being filed in response to the Examiner's Answer.

(i) *Status of Claims:*

Claims 1-15 remain pending in the application.

The status of each of the claims is as claimed:

1. Claims 1-15 are rejected.

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(ii) *Grounds of Rejection to be Reviewed on Appeal:*

1. The rejection of Claims 5, 10 and 15 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement because the claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention;
2. The rejection of Claims 8 and 14 under 35 U.S.C. 112, second paragraph, because they recite the limitation "... said second phase reinforcing material increases a modulus of elasticity of said fibers in a radial direction of said fibers", whereby the respective independent claim from which the aforementioned claims depend recite "... increases modulus of elasticity of the strands in a longitudinal direction of said fibers...";
3. The rejection of Claims 1-7, 9-13 and 15 under 35 U.S.C. 103(a) as being unpatentable over De Angelis (5,566,786) in view of Olesen, et al. (4,956,039); and
4. The rejection of Claims 8 and 14 under 35 U.S.C. 103(a) as being unpatentable over De Angelis in view of LaNieve et al (6,162,538).

(iii) *Argument:*

The rejection of Claims 5, 10 and 15 under 35 U.S.C. 112, first paragraph:

In the Examiner's Answer at pages 8-9, the Examiner stated:

With respect to the rejections of Claims 5, 10 and 15 under 35 U.S.C. 112, first paragraph, in response to claim language in which the distribution of reinforcing material (material of a second phase) in a base material (material of a first phase) will increase the modulus of elasticity of the strands (the strands being of said first phase) in a longitudinal direction is called into question by the previously cited prior art of record as well as the prior art cited as being pertinent to the instant invention in which the review of random versus parallel, as well as bi-directional, orientation of reinforcing materials, of either fibrous or particulate form, are reviewed in depth. As stated in the rejection, the localized concentration of stresses attributable to a randomly distributed reinforcing material having a higher stiffness than that of a base material, such as the spheres, grains, capsules, discs or plates as claimed, would degrade the modulus of elasticity of a fiber a longitudinal direction as understood by one having ordinary skill in the art.

The appellant's argument that "while random distribution and parallel distribution of the reinforcing material may result in different values, both create an increase in the modulus of elasticity of the strands in a longitudinal direction of the fibers..." (Page 8, 2nd para.) is not convincingly demonstrated/explained, in that a parallel distribution is associated with a reinforcing material comprising fibers whereas a random distribution is associated with reinforcing material comprising spheres, grains, capsules, discs and/or plates. In fact, with respect to the latter reinforcing materials, their contribution in increasing a modulus of elasticity would be limited to that of a radial direction of a fiber, as supported repeatedly by the prior art deemed pertinent to the

instant invention as well as the reference of LaNieve et al as cited above (See Col. 6, L. 43 as well).

(Emphasis added).

Additionally, at page 12 of the Examiner's Answer, it was stated:

As an additional comment with respect to the rejections under 35 U.S.C. 112, first paragraph of Claims 5, 10 and 15, attention is directed to La Nieve et al (Col. 6, Lines 34 - 44), in which the use of platelets and needles as reinforcing material are addressed with the cautionary statement that the "... particles should be small enough that the fiber (base material, sic) tensile properties do not appreciably deteriorate..."

Consequently, appellant's arguments with respect to the teachings of LaNieve et al, in particular the cited excerpt from their disclosure (Page 14, final para.), are not persuasive in that the excerpt is a statement with respect to the prior art at the time of their invention and not with respect to their inventive feature(s) as reviewed above.

(Emphasis added).

The Examiner has failed to appreciate that a random distribution of a non-fiber reinforcing material in a base material can increase the longitudinal modulus of elasticity of strands formed from the materials as claimed. The Examiner has misinterpreted the teachings of LaNieve et al. in erroneously arriving at the conclusion that "localized concentration of stresses attributable to a randomly distributed reinforcing material having a higher stiffness than that of a base material . . . would degrade the modulus of elasticity of a fiber". LaNieve et al. at col. 6, line 43 merely states that "particles should also be small enough that the fiber tensile properties do not appreciably deteriorate". Particle size is not at issue in the present rejection under 35 U.S.C. 112, first paragraph.

One of ordinary skill in the art understands that a random distribution of reinforcing particles can increase the modulus of elasticity of a strand in both a radial direction and a longitudinal direction, regardless of whether the particles are fibers, spheres, grains, capsules, discs or plates. Being random, at least a portion of the reinforcing particles will have an orientation that increases the modulus of elasticity in the longitudinal direction of the stand. This understanding is further supported by Appellant's specification, which provides "[t]hanks to the effect of the reinforcing particles 12 in the first phase 13 the modulus of elasticity of the entire fiber in the longitudinal direction and/or in the transverse direction of the fiber 5' is increased." (Specification at paragraph [0041], emphasis added). Appellant's specification clearly describes the subject matter of Claims 5, 10, and 15 in such a way as to reasonably

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convey to one skilled in the art that the inventor had possession of the claimed invention at the time the application was filed. Accordingly, the rejection under 35 U.S.C. 112, first paragraph, is improper.

The rejection of Claims 8 and 14 under 35 U.S.C. 112, second paragraph:

In the Examiner's Answer at page 9, the Examiner stated:

With respect to the rejections of Claims 8 and 14 under 35 U.S.C. 112, second paragraph, the claim language clearly recites an increase in modulus of elasticity in a radial direction whereas the independent claims from which said claims depend recite an increase in modulus of elasticity in a longitudinal direction – only. Consequently, in view of the disclosure, the claim language of said dependent Claims 8 and 14 was interpreted as an increase in modulus of elasticity in a radial direction – in the alternative to the longitudinal direction - as supported by the disclosure and concurred as much by appellant in that "... the specification that the modulus of elasticity of the entire fiber in the longitudinal direction and/or the transverse direction is increased" (Page 8, 3rd para.). Therefore, the prosecution of the claims was in accordance to the recitation of the claim language.

(Emphasis added).

The Examiner has adopted a highly strained interpretation of Appellant's claims. Independent Claims 7 and 11 recite that the "reinforcing material increases a modulus of elasticity of the strands in a longitudinal direction". The independent claims employ the inclusive or open-ended transitional phrase "comprising", which does not exclude additional, unrecited elements or method steps. The independent claims clearly do not recite an increase in modulus of elasticity in only a longitudinal direction, as construed by the Examiner.

Claims 8 and 14 depend from independent Claims 7 and 11. Claims in dependent form shall be construed to include all the limitations of the claim incorporated by reference into the dependent claim. See MPEP 608(i)(c). Dependent Claims 8 and 14 properly refer back and further limit the independent claims by reciting that the reinforcing material "increases a modulus of elasticity of said fibers in a radial direction of said fibers." Properly construed, the dependent Claims 8 and 14 include both the longitudinal direction limitation recited in Claims 7 and 11 and the radial direction limitation recited in Claims 8 and 14.

Appellant reiterates that the specification at page 7, lines 22-24 indicates that the modulus of elasticity of the entire fiber in the longitudinal direction and/or the transverse

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direction is increased. There is no language in Claim 8 and 14 that would lead a skilled artisan to believe that Appellant meant to replace the longitudinal direction limitation of the independent claims with a radial direction limitation, as suggested by the Examiner. The correct interpretation of dependent Claims 8 and 14 is that the modulus of elasticity is increased in both the longitudinal direction and the radial direction. Accordingly, the rejections of Claims 8 and 14 under 35 U.S.C. 112, second paragraph, is improper. The Examiner's prosecution of the claims in accordance with the "radial directly only" interpretation is also improper.

The rejection of Claims 1-7, 9-13 and 15 under 35 U.S.C. 103(a):

In the Examiner's Answer at pages 9-11, the Examiner stated:

With respect to appellants arguments to the rejections of Claims 1 – 7, 9 – 13 and 15, in particular the rejections of Claims 1 and 7, appellant incorrectly argues that neither the reference of De Angelis et al or Olesen disclose "... or suggest any new phase introduced in the bulk of the fibers. The fibers disclosed in both documents consist of only one phase" (Page 10, 4th para.).

As reviewed in the rejections, De Angelis et al disclose "Each individual strand 4 is treated with an impregnating medium, for example a polyurethane solution, for the protection of fibers 5" (Col. 3, L. 56). De Angelis et al disclose further that "The higher the portion or share of polyurethane, the higher becomes the bending fatigue strength. However, the carrying capacity and the modulus of elasticity ... fall with increasing portions of polyurethane. The polyurethane utilized for the impregnation of strands 4 can, according to the desired bending fatigue strength, vary, for example, between 10 and 60%" (Col. 3, L. 60 - 67), wherein the fibers are of aramid (aromatic polyamide). Therefore, De Angelis et al disclose the introduction of a material of a second phase in a material of a first phase for an increase of the bending strength of said material of a first phase, in keeping with said material of said first phase being impregnated with a material of a first phase, whereby the definition of the verb "to impregnate", according to Merriam-Webster's Dictionary, is "... to cause to be filled, imbued, permeated, or saturated..." Hence, a by-product of the fiber being impregnated with polyurethane is a loss in its load-carrying capacity (modulus of elasticity) in a longitudinal direction.

Appellant argues further that the strands, not each individual fiber, of De Angelis et al are treated with the impregnation medium. First of all, though each fiber may not be individually treated, this in itself does not contradict the claim language. Secondly, by treating the strands, the fibers of De Angelis et al, whether in total or in part, are treated as well, as stated as such in the excerpt above and as known to one having ordinary skill in the art.

De Angelis et al, however, address an increase of modulus of elasticity in a radial direction.

Therefore, attention was directed to Olesen in which the addition of materials in a second phase are introduced to a material of a first phase, wherein the material of a first phase is one of various thermoplastics (Col. 4, L. 15) and the materials of second phase being "... staple fibers of glass, aramid, or carbon..." and whereby a particular composite structure comprises "... polypropylene with E-Glass staple fibers..." (Col. 4, L. 5 – 9), in keeping with the invention of Olesen to "... provide a cable-like synthetic composite body which satisfies the requirements of being able to bear relatively high tensile and

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compressive forces in every respect and (sic) which has adequate bending stiffness..." (Col. 2, L. 45), thereby increasing the modulus of elasticity in a longitudinal direction.

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The appellant argues that the focus of Olesen is placed on the sleeve layer(s) and not to a load-bearing fiber itself. However, Olesen teaches further the "... degree of filling of the second thermoplastic synthetic material with the reinforcing fibers amounts to from 10 to 80%..." (Col. 4, L. 10) as well as the intimate bonding of the sleeve layers with a core string, through an extrusion process at elevated temperatures, enabling the reinforcing fibers of the sleeves to "... partially penetrate into the desired first thermoplastic material, so that the tensile and pressure forces acting on the sleeve are transmitted to the core string" (Col. 2, L. 56 – Col. 3, L. 16), whereby the core string consists of "...endless filaments" and forms a unitary, composite body with the sleeves and their reinforcing materials.

Therefore, Olesen teaches the introduction of a reinforcing material (second phase) into a fiber (first phase) for purpose of enhancing the tensile strength of a fiber for purpose of increasing its modulus of elasticity in a longitudinal direction.

(Emphasis added).

As previously stated in Appellant's Brief on Appeal, the cited De Angelis et al. reference does not teach or suggest a "reinforcing material in a second phase and being distributed in said base material" as recited in Appellant's claims. Instead, De Angelis et al. teach a polyurethane solution to impregnate strands 4. (De Angelis et al. at col. 3, lines 56-64). The strands 4 are twisted or laid out of the individual fibers 5. (De Angelis et al. at col. 3, lines 55-56). The De Angelis et al. polyurethane solution is applied to outsides of the strands 4 for protection of the fibers 5. Although the polyurethane solution may impregnate the strands 4 between the individual fibers 5, De Angelis et al. does not teach or suggested that the individual fibers 5 themselves are in any way filled, imbued, permeated, or saturated with the polyurethane solution as suggested by the Examiner.

The Examiner has also mistakenly read Olesen as teaching the introduction of reinforcing material into a fiber. The cited Olesen reference teaches the use of "staple fibers" for the second plastic 13 of the sleeve layer. (See Olesen at col. 4, lines 4-18). However, Olesen does not teach or suggest filling the load-bearing strings 11. The second plastic 13 of the sleeve layer is applied externally to the strings 11. The combination of the De Angelis et al. and Olesen references do not teach or suggest "... strands comprising: a plurality of load-bearing fibers formed of a base material being in a first phase; and a reinforcing material being in a second phase and being distributed in said base material . . ." as recited in Appellant's Claims 1-7, 9-13 and 15. For at least this

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reason, Claims 1-15 are non-obvious in view of the combination of De Angelis et al. and Olesen.

The rejection of Claims 8 and 14 under 35 U.S.C. 103(a):

In the Examiner's Answer at pages 9-11, the Examiner stated:

With respect to Claims 8 and 14, the reference of LaNieve et al teaches the addition of particulates, either metallic or non-metallic as reviewed above, in aramid fibers for the enhancement of the flexural strength of the fibers without significantly reducing the tensile strength of the fiber, this being the inventive feature of their invention (Col. 3, L. 27 – 35), as reviewed in previous office action(s).

Therefore, La Nieve et al teach the enhancement of their shear strength at a minimized cost to their tensile strength, thereby increasing a modulus of elasticity of their fibers in a radial direction and, therefore, meeting the claim language.

(Emphasis added)

The Examiner has maintained that LaNieve et al., which discloses that "filled para-aramid components do not exhibit a substantial loss of tensile strength", also teaches or suggests a reinforcing material distributed in a base material for "increasing a modulus of elasticity of said fibers in a radial direction", as recited in Appellant's Claims 8 and 14. This conclusion is untenable. LaNieve et al. at col. 2, lines 28-39 states that "the addition of particles to certain types of aromatic polyamide fibers can have a severe detrimental impact on fiber tensile strength". Properly read as a whole, LaNieve et al. clearly teaches at least a minimal loss of tensile strength with the introduction of particulates to aramid fibers. Thus, LaNieve et al. teaches away from the claimed invention. Accordingly, Claims 8 and 14 are non-obvious and patentable over the cited combination of art.

Moreover, Appellant notes that the Examiner incorrectly employed a "radial directly only" interpretation of the claims during prosecution, as explained hereinabove. Even if LaNieve et al. were to teach or suggest a strand having a reinforcing material distributed in a base material for increasing modulus of elasticity, as suggested by the Examiner, the increase in modulus of elasticity would be only in the radial direction and not in both the radial direction and the longitudinal direction as recited in Appellant's dependent Claims 8 and 14. For at least this further reason, the rejection of Claims 8 and 14 under 35 U.S.C. 103(a) is improper.

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(iv) *Conclusion:*

For the foregoing reasons, and the reasons presented in the Brief on Appeal filed February 11, 2008, it is respectfully requested that this Honorable Board REVERSE the outstanding rejections of Claims 1-15.

Respectfully submitted,



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